REMARKS/ARGUMENTS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner has objected to the specification as failing to provide proper antecedent basis for the claim term "yoke" as recited in claim 18. In addition the Examiner has rejected claims 3-18 under 35 U.S.C. 112, first paragraph. In particular the Examiner asserts that the term recited as "yoke" in claim 18 is not identified in drawings and not addressed in the specification. The term yoke is addressed in the specification at page 15, line 18 with reference to Figure 3, at page 16, line 3 with reference to Figure 4, at page 17, line 11 with reference to Figure 6 and in the List of Reference Numerals at number 32 on page 20. In particular the specification on page 15 line 13 has been amended to define yoke with reference numeral 20. FIGS. 3 and 7 have also been amended as described below.

For a further definition of the term yoke enclosed please find as attachment "B" a copy of an excerpt from Van Nostrand's Scientific Encyclopedia, Sixth Edition. As shown, this edition was published in 1983, which was before the filing date of the present application. This encyclopedia defines yoke as:

The yoke of a motor or generator is the supporting and magnetic structure back of the poles, i.e. it is the part of the machine through which the flux passes in going between poles at the ends away from the armature.

Additionally the term yoke is addressed in the specification of Hill, in column 3, line 43, a reference cited by the Examiner in the Final Office Action.

In addition, the drawings have been amended to correspond to the changes made in the specification. In particular, FIGS. 3 and 7 have been amended to add the reference numeral 20 with respect to the term "yoke". The amendments to the drawings are attached as attachment "C"

For the above reasons it is respectfully requested that the Examiner withdraw the objections based on 35 U.S.C. 112 regarding the claim term yoke.

The Examiner has rejected claims 3-5 and 10-18 under under 35 U.S.C. 103(a) as being unpatentable over *Dukshtau et al.* in view of *Hill*.

The Examiner states that *Dukshtau et al.* discloses an electrical machine with a least two laminated and independently structured carrier segments having suitable cavities, a yoke and separately wound winding carriers secured in the cavities. *Dukshtau et al.* does not disclose the winding carrier being limited by two adjacent nonwound poles.

Claim 18 of the present application has been amended to clearly distinguish the present invention over *Dukshtau et al.* Claim 18 contains the following passage:

at least two winding carriers which are each separately wound and which are each detachably secured in an integral manner in each of said plurality of cavities;

While *Dukshtau et al.* indicates that the winding carriers are "mounted" and "arranged" in the slots formed in the carrier segments (see *Dukshtau et al.* at Abstract and col. 16, lines 40-41), *Dukshtau et al.* does not disclose that the winding carriers are inserted in an integral manner with the carrier segments. Support for this feature is found in the specification on page 14 lines 18-22.

In fact, *Dukshtau et al* discloses in FIG. 1 poles 2_1 to 2_{4c} that are essentially separate from the carrier bodies 4, 5. In fact, these poles have separate air gaps between them because they

are essentially not formed integral with the carrier bodies and have specifically designed distances t_1 and t_2 spacing the poles apart.

Dukshtau et al also differs from claim 18 in that *Dukshtau et al* discloses a device having a differential air gap between a stator and a rotor. Claim 18 differs dramatically in this manner from *Dukshtau et al* and includes the following feature:

wherein when said at least two winding carriers are detachably secured in each of said plurality of cavities there is formed a substantially constant air gap between the movable section and the stationary section of the device.

While the above features of claim 18 are not shown in *Dukstau*, the Examiner has also referenced German Patent No. DE 19643561 to *Hill*.

The Examiner states that *Hill* discloses at FIGS. 7 and 8 an electrical machine having winding carriers separated by two adjacent nonwound poles. *Hill*, however does not disclose a cavity defined by a yoke and two adjacent nonwound poles coupled together as claimed in independent Claim 18 of the present application:

at least two carrier segments, each forming a single piece receiving body, wherein each carrier segment is laminated and independently structured, and each carrier segment comprises a yoke, a plurality of nonwound poles connected to each other via said yoke, and a plurality of cavities ~~having suitable cavities, a yoke, and nonwound poles~~, wherein each cavity is defined by said yoke and two adjacent nonwound poles of each carrier segment; and

The structure identified as 30 in Figure 7 of *Hill* is not a yoke which defines the cavity into which the winding carriers are inserted and removed as in the present application.

In addition the nonwound poles in *Hill* are not connected together and that design does not form a single piece receiving body. Instead, in *Hill*, the non-wound poles shown by reference numeral 27, are separate segments which do not form a carrier segment as described in the above passage of claim 18. Instead, the separate parts in Hill are only kept together when a thin bandage of fiber reinforced ribbon (32) is applied. This type of a fiber reinforced ribbon (32) can be used when using this design for a stator but would probably not be useful when using this design for a rotor or a "movable section" as described in the preamble. This "movable section" could be in the form of a rotor when used with a rotational machine.

This design difference is significant because the design of *Hill* is much more complicated and requires many more parts. FIG. 8 in *Hill* shows the many parts of this complicated structure which

may not be suitable for construction as a rotor, particularly a rotor that can easily receive wound poles as with the design of claim 18.

As disclosed in the present application, the yoke along with the nonwound poles comprise the carrier element and form a single piece receiving body. Thus, the construction disclosed in *Hill* is not analogous to the one disclosed here.

Furthermore, the specification of the present invention specifically referenced *Hill* and stated on page 3, paragraph 2, that in practice it was difficult to assemble a rotor from the pole segments described in *Hill*. Thus, the applicant believes that one would not look to *Hill* to solve the problem of constructing a rotor comprising carrier segments and winding carriers.

In addition, the applicant believes that claims 3-17 which ultimately depend from claim 18 are also allowable. Furthermore new claim 19 has been added. New claim 19 includes many of the elements of claim 18 but has been phrased to further distinguish it from the references cited. In addition this new claim 19 does not contain any reference to the term "yoke" which was mentioned in the specification. The applicant believes that this new claim 19 is patentable over the references cited taken either singly or in combination.

Claims 3-19 remain in the application. Claims 1 and 2 have been previously canceled without prejudice. New claim 19 has been added. The applicant believes that the remaining claims 3-19 as written are allowable over the references cited taken either singly or in combination. Accordingly the applicant respectfully requests early allowance of the remaining claims.

Respectfully submitted,

WERNER EBERLE (PCT)

William C. Collard

Allison C. Collard, Reg. 22,532
Edward R. Freedman, Reg. 26,048
William C. Collard, Reg. 38,411
Attorneys for Applicant

COLLARD & ROE, P.C.
1077 Northern Boulevard
Roslyn, New York 11576
(516) 365-9802

ACC:ejc
Enclosures: Attachments A, B, and C

I hereby certify that this correspondence is being faxed to the U.S. Patent Office, Attention: Examiner: J. Waks, Group 2834 at (703) 872-9319 on July 23, 2003.

William C. Collard

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ATTACHMENT "A"

ABSTRACT

An electrical machine with a single-pole winding substantially built from bodies, whereby at least one of these ~~said~~ bodies is structured from a number of segments at least corresponding with the number of poles of the electrical machine. At least one of the inductively excitable bodies of the electrical machine is substantially assembled from receiving bodies suitable for receiving at least two winding carriers in an operationally fixed manner. The receiving bodies are decoupled from the given pole number of pole pitch of the machine and can be dimensioned depending on the manufacturing tolerance.

ATTACHMENT "B"

VAN NOSTRAND'S SCIENTIFIC ENCYCLOPEDIA

Sixth Edition

Animal Life
Biosciences
Chemistry
Earth and Atmospheric Sciences
Energy Sources and Power Technology
Mathematics and Information Sciences
Materials and Engineering Sciences
Medicine, Anatomy, and Physiology
Physics
Plant Sciences
Space and Planetary Sciences

DOUGLAS M. CONSIDINE, P.E.
Editor

GLENN D. CONSIDINE
Managing Editor

VAN NOSTRAND REINHOLD COMPANY
New York

material will deform without a significant increase in the load is called the yield point. Some materials do not have a yield point and in others it is not a well-defined value. Consequently, in these cases it has become common practice to use a quantity called the yield strength. The yield strength is the unit stress corresponding to a specific amount of permanent unit deformation.

YOKE. 1. The yoke of a motor or generator is the supporting and magnetic structure back of the poles, i.e., it is the part of the machine through which the flux passes in going between poles at the ends away from the armature. 2. The yoke of a magnetic-deflection cathode ray tube is the frame upon which is wound the horizontal and vertical deflecting coils.

YOKE (Deflection). Deflection Yoke.

YOLK GLAND. A portion of the reproductive system of the female by which yolk is secreted. In some animals called the vitellarium.

YOLK SAC. An accessory embryonic membrane formed in the vertebrates as an enveloping structure around the yolk of the egg. It is connected with the mid gut of the embryo and serves for the absorption of nourishment during embryonic life, and in some species, notably the fishes, after the individual has become active. The wall of the structure is composed of the same germ layers that form the gut, a lining endoderm, and a covering of splanchnic mesoderm. In the latter blood and blood spaces develop at an early period, later forming a network of vitelline vessels from which blood flows into the body of the embryo by way of a pair of large omphalomesenteric veins. Branches of the arterial system of the body extend into this plexus, completing a cycle for the transportation of the absorbed food to the developing body.

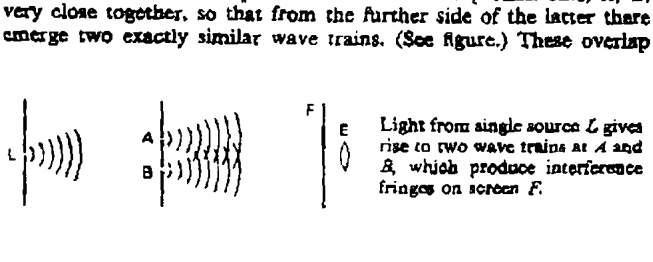
The yolk sac persists even in the mammals, where yolk is usually not present. In these forms it serves for the absorption of materials from the surrounding uterus during early development and is involved in the development of the circulatory system. It soon becomes a vestige, however, as its functions are taken over by other membranes.

YOSEMITE. A deeply U-shaped portion of a glacial valley, with sheer walls, hanging troughs, and a wide almost level floor, encountered in the Sierra Nevada Mountains of California. These formations resemble the Yosemite Valley, California.

YOUDEN SQUARE. If in a balanced incomplete block design the number of blocks is equal to the number of treatments, it is possible to arrange the blocks as columns of a rectangular array in such a way that each treatment occurs just once in every row. The corresponding experimental design is known as a Youden square (cf. **Latin Square**) and differences between rows as well as differences between columns can be eliminated from the estimate of error.

YOUNG-HELMHOLTZ THEORY. The original theory of color vision. It assumes the existence in the eye of three mechanisms each sensitive to one of the three primary colors, red, green and blue. It accounts for some of the observed phenomena of color vision, but not for others. The theory is convenient for many purposes but has been modified by later students.

YOUNG INTERFERENCE EXPERIMENT. In 1801 Thomas Young made the epochal discovery of the interference of light waves, by means of an experiment which has become classic. Light from a narrow slit L falls on a plate in which are two parallel slits, A, B, very close together, so that from the further side of the latter there emerge two exactly similar wave trains. (See figure.) These overlap in the region beyond AB and produce interference. If a screen F is placed at some distance from AB, alternate bright and dark bands or fringes appear on it, parallel to the two slits. If a translucent screen is used (or in the case of white light, a plate of colored glass acting as a light filter), these bands may be viewed by means of a magnifier beyond it at E, or better, a low-power micrometer eyepiece, with which the width of the band-interval can be measured.



Light from single source L gives rise to two wave trains at A and B, which produce interference fringes on screen F.

It is easy to show from the elementary theory of interference that if $AB = s$, if the distance from AB to F is x, and if the wavelength of the light is λ, the distance on the screen between any two consecutive dark bands or any two consecutive bright bands is $b = x\lambda/s$. Therefore if b, s, and x are measured, we have at once a means of determining the wavelength: $\lambda = bs/x$.

Other devices have proved more satisfactory than the pair of slits, such as the biprism, Fresnel's mirrors, or Lloyd's mirror; each of which produces a double virtual image of the slit L to serve as the two wave-train sources A and B.

See also list of optical terms in this encyclopedia under **Optics.**

YOUNG'S MODULUS. A modulus of elasticity in tension or compression, involving a change of length. See also **Elasticity.**

YOUTH (Geological). From a topographical standpoint, the youth stage is the first stage of the cycle of erosion in the topographic development of a landscape or region, during which stage the original surface or structure remains the dominant feature of the relief. The stage is typified by a few, small and widely spaced young streams; by broad, flat-top interstream divides and upland surfaces, only modified in a minor way by erosion; by partially developed or poorly integrated drainage systems, the latter having numerous swamps and shallow lakes; and by rapid and progressive increase of local relief, with sharp landforms, steep and irregular slopes, and a surface considerably above sea level.

From a coastal standpoint, the youth stage is that phase of development of a shore, shoreline, or coast that is typified by an ungraded profile of equilibrium. In the case of a shoreline of submergence, an irregular or crenulate outline, vigorous wave action, formation of sea cliffs, and associated erosional forms will be present, as well as a steep offshore profile, and the presence of bays, promontories, offshore islands, spits, bars, and other fairly minor irregularities. In the case of a shoreline of emergence, there usually will be a straight and simple outline, larger waves breaking well offshore, small waves coming to land to produce a nip or low cliff, and the formation of barrier beaches, lagoons, and marshes.

From the standpoint of a stream, the youth stage is the first stage in the development of a stream, a stream that has just commenced its work of erosion and is increasing steadily both in vigor and efficiency, enabled to erode its channel and not yet having reached a graded condition. The stream in this stage is typified by an ability to carry a load greater than what it is carrying; by forming a deep, narrow, steep-walled, V-shaped valley, gorge, or canyon with a steep and irregular gradient and rocky outcrops; by numerous waterfalls, rapids, and lakes; by a swift current and clear water; by a few, short, straight tributaries; by an ungraded bed; and by the absence of flood plains.

YTTERBIUM. Chemical element symbol Yb, at. no. 70, at. wt. 173.04, thirteenth in the Lanthanide Series in the periodic table, mp 819°C; bp 1196°C, density 6.966 g/cm^3 (20°C). Elemental ytterbium has a face-centered cubic crystal structure at 25°C. The pure metallic ytterbium is silver-gray in color and is stable in moist or dry air up to 200°C, after which oxidation occurs. The metal is readily dissolved by dilute and concentrated mineral acids. The metal dissolves in liquid NH_3 to yield a dark-blue color. There are seven natural isotopes ^{168}Yb, ^{170}Yb through ^{174}Yb, and ^{176}Yb. Ten artificially-produced isotopes have been identified. Ytterbium is one of the least abundant elements of the rare-earth group and 53rd among all elements occurring in the earth's crust. The element was first identified by J.D.G. Marignac in 1878. Electronic configuration

$$1s^22s^22p^63s^23p^63d^{10}4s^24p^64d^{10}4f^{13}5s^25p^65d^16s^2.$$

Ionic radius Yb^{2+} 0.93 Å; Yb^{+3} 0.86 Å. Metallic radius 1.940 Å. First ionization potential 6.25 eV; second 12.17 eV. Other important

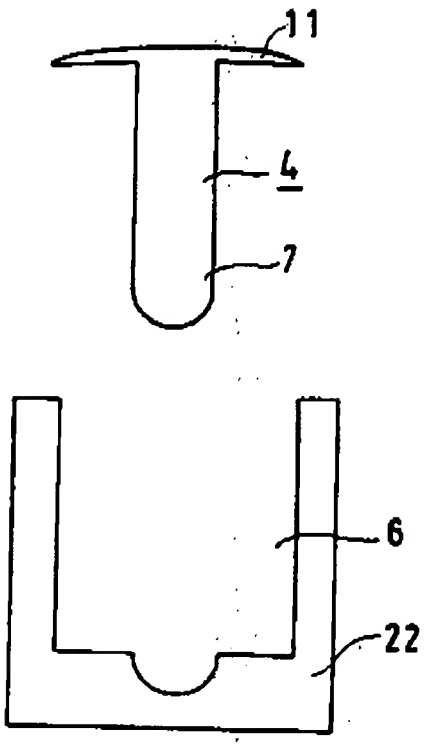


FIG.2

FIG.3

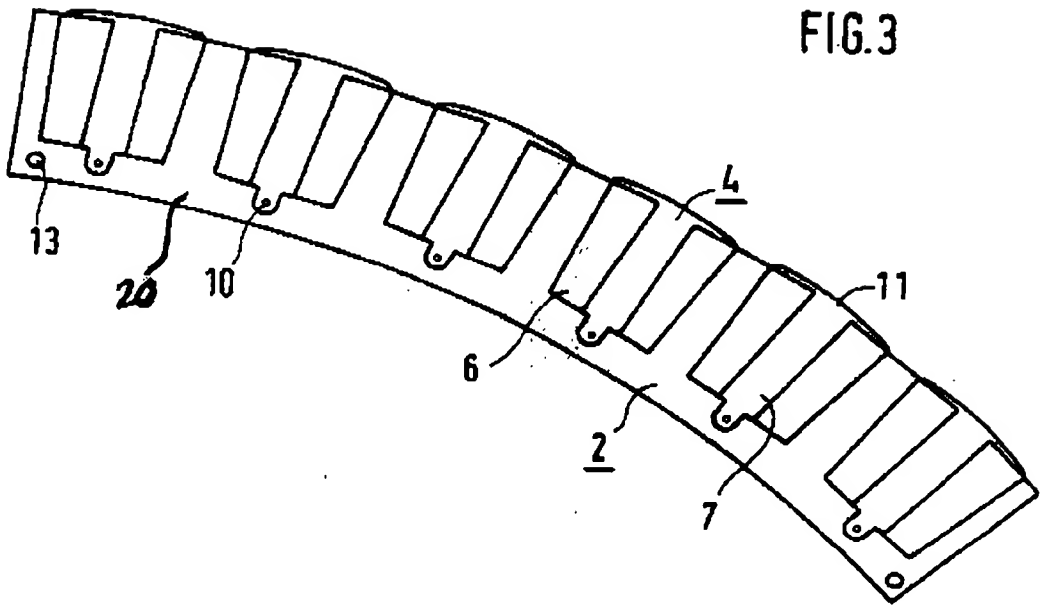


FIG.6

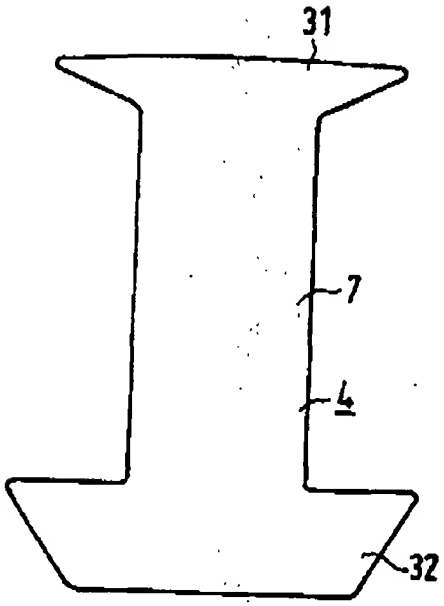


FIG.7

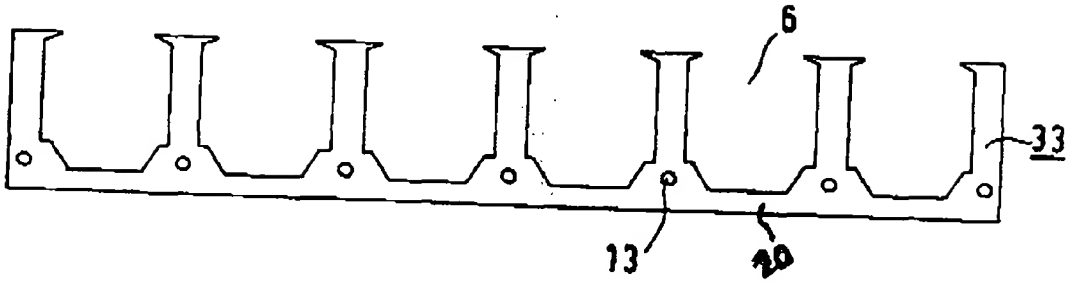
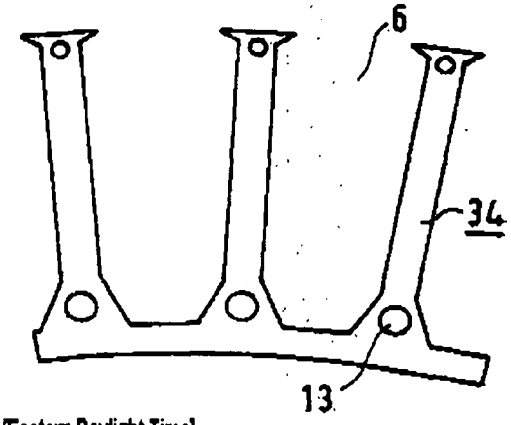


FIG.8



ATTACHMENT C